

Patent Claims

1. A switching converter having the following features:

- a switch (T1; T2) having a control terminal (G) and a first and second load terminal (D, S),
- a rectifier arrangement (GL1; GL2) connected to the switch (T1; T2) and having output terminals (AK1, AK2), at which an output voltage (Uout) is available for a load (RL),
- a controller arrangement (RA1, RA2), which provides a control signal (RS; DRS) dependent on the output voltage (Uout),
- a drive circuit (AS1; AS2), which provides drive pulses according to which the switch (T1; T2) turns on or turns off,

characterized in that

the drive circuit (AS1; AS2) generates identical drive pulses whose frequency is dependent on the control signal (RS; DRS).

2. The switching converter as claimed in claim 1, in which the drive circuit (AS1; AS2) generates drive pulses (AI) of identical duration and at an identical time interval depending

on whether the control signal (RS) is greater or less than a reference signal (Vref; REF2).

3. The switching converter as claimed in claim 1 or 2, in which the controller arrangement has a proportional controller, a proportional-integral controller or an integral controller.

4. The switching converter as claimed in one of the preceding claims, in which the drive circuit (AS1) has a clocked comparator arrangement (K1), to which the control signal (RS), the first reference signal (Vref) and a clock signal (CLK) are fed.

5. The switching converter as claimed in claim 4, in which the clocked comparator arrangement generates drive pulses (AI) of a predetermined time duration with the timing of the clock signal (CLK) if the control signal (RS) is greater than the first reference signal (Vref).

6. The switching converter as claimed in one of the preceding claims, in which the controller arrangement (RA2) is a digital controller arrangement which provides a discrete-time control signal (DRS).

7. The switching converter as claimed in claim 6, in which the drive circuit (AS2) has a digital comparator arrangement (16) and a pulse shaping filter (18) connected downstream of the digital comparator arrangement (16), the drive pulses (AI) being available at an output of the pulse shaping filter (18).

8. The switching converter as claimed in one of the preceding claims, in which the controller arrangement has a noise shaping filter (NSF), to which a signal dependent on the output voltage is fed.

9. The switching converter as claimed in one of the preceding claims, in which the drive pulses (AI) are fed to an input of a level converter, to whose output the control terminal (G) of the switch (T1; T2) is connected.

10. The switching converter as claimed in one of the preceding claims, in which the rectifier arrangement (GL1; GL2) has a coil connected in series with the switch (T1; T2).

11. A method for driving a switch (T1; T2) connected to a rectifier arrangement (GL1, GL2), at which an output voltage (Uout) is available, in a switching converter, the method having the following features:

- generation of a control signal (RS) dependent on the output voltage (Uout),
- generation of a drive signal with a sequence of respectively identical drive pulses (AI), the frequency of the drive pulses (AI) being dependent on the control signal.

12. The method as claimed in claim 11, in which the control signal (RS) has a signal component which is formed by integration of a differential signal made from a signal (US) proportional to the output voltage (Uout) and a reference signal (Vref2; REF).

13. The method as claimed in claim 11, in which the control signal (RS; DRS) has a signal component which is proportional to the output voltage (Uout).

14. The method as claimed in one of claims 10 to 12, in which the drive pulses are formed with the timing of a clock signal (CLK) depending on whether the control signal (RS) is greater or less than a reference value.